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Piping for Steam Power Service, by M. William Ehrlich.

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Piping for Heating With District Steam, by Sterling S. Sanford.

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Measurement of Flow of Liquids by the Co-ordinate Method, by Prof. F. W. Greve.

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Yant, W. P., Heat and Moisture Losses from the Human Body and Their Relation to Air Conditioning Problems, Sept. 429